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HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, et cetera., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund
Bureau of Medicine and Surgery (Code 23)
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Washington 25, D. C.

Committee

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Responsibilities of the Medical Profession in the Use of X-Rays and Other Ionizing Radiation

I. Introduction. --(1) The United Nations General Assembly, being aware of the problems in public health that are created by the developments of atomic energy, established a Scientific Committee on the Effects of Atomic Radiation. This Committee has considered that one of its most urgent tasks was to collect as much information as possible on the amount of radiation to which man is exposed today, and on the effects of this radiation. Since it has become evident that radiation due to diagnostic radiology and to radiotherapy constitutes a substantial proportion of the total radiation received by the human race, the Committee considers it desirable to draw attention to information that has been obtained on this subject.

(2) Modern medicine has contributed to the control of many diseases and has substantially prolonged the span of human life. These results have depended in part on the use of radiation in the detection, diagnosis, and treatment of disease. There are, however, few examples of scientific progress that are not attended by some disadvantages, however slight. It is desirable therefore to review objectively the possible present or future consequences of increased irradiation of populations which result from these medical applications of radiation.

II. General Survey of the Irradiation of Human Beings. --(3) Man has always been exposed to some irradiation from natural sources. To this has now been added, as a result of modern discoveries and the applications of ionizing radiation and radioactivity, certain forms of artificial irradiation.

(4) Natural irradiation is due to: (1) cosmic radiation, (2) "background" gamma radiation from radioactive substances present locally in the earth, rock or building materials, and from disintegration products of radon in air, and (3) radiations emitted from natural radioelements such as potassium 40, radium, radon, and carbon 14 which are incorporated in the body.

(5) The amount of this natural radiation varies with locality, but has been estimated as usually delivering between 70 and 170 mrem per year to the gonads. Of this total, the major contributions are of about 45% from local gamma radiations, 30% from cosmic rays and 20% from body potassium 40.

(6) Artificial irradiation is derived from: (1) the contamination of the environment, the atmosphere, or water by radioactive waste from atomic industries or from users of radioelements; (2) the radioactive fallout, at greater or lesser distances from the source, or radioactivity resulting from the explosion of nuclear devices; (3) the occupational exposure of certain groups of workers: medical practitioners, radiologists, dentists, nurses, atomic energy workers, uranium or thorium miners, and the industrial or scientific users of radiation generators or radioactive isotopes; (4) the medical use of X-rays and other ionizing radiations and radioelements in the

detection, diagnosis, investigation, and treatment of human diseases; (5) the use of certain devices which emit radiation, such as television receivers, watches with luminous dials, and the X-rays generators used for the purpose of fitting shoes.

(7) The amount of artificial radiation must vary considerably in different countries, and we have inadequate information as to the over-all significance of these factors. In certain countries where estimates have been made, it appears that the greatest gonad irradiation of the population is due to diagnostic radiological procedures, the amount from this source about equalling that from all natural sources in certain instances. The total present contribution from occupational exposure, from the products of atomic industries, from radiotherapy, and from the radiating devices mentioned above (paragraph 6, subparagraph 5) is likely to be very considerably smaller. That from radioactive fallout to the gonads appears at present to be in the region of 1% of the natural gonad irradiation in most areas.

(8) Both the magnitude and the significance of these various sources are under review by the Committee. Since medical irradiation accounts for a substantial if not the major proportion of all artificial exposure, it is important that its magnitude should be known accurately for different countries and circumstances. The possibility of making such an assessment depends upon the help of the medical profession, and particularly on the adequacy and availability of records kept by doctors, dentists, and organizations responsible for the use of ionizing radiation.

III. Radiation Hazards. --(9) The medical use of radiation is clearly of the utmost value in the prevention, diagnosis, investigation, and treatment of human disease, but the possible effects of this irradiation of individuals require examination.

(10) Generally speaking, the irradiation of living beings may produce radiobiological effects either on the irradiated individual himself or, through him, on his descendants, the former being termed "somatic" and the latter "genetic" effects. Somatic effects vary according to the different organs or tissues affected, and range from slight and reversible disturbances such as cutaneous erythema to the induction of leukemia or of other malignant diseases. The possible reversibility of the somatic effects of radiation received in small doses or at low rates encourages the belief that there are permissible doses of radiation which will not cause completely irreversible or significant somatic damage. The threshold for occasional somatic damage may, however, prove to be low. In the case of genetic effects, on the other hand, there may be no threshold. These effects increase with a frequency corresponding to the total amount of radiation received by the germinal tissues, and in the great majority of cases, are adverse.

(11) Many other factors complicate the interpretation of radiobiological effects. The differences between whole and partial body radiation, between a single exposure and continuous irradiation, or between the effects of

different types of radiation are still imperfectly understood. Biological differences in the radiosensitivity of various tissues, or of the tissues of people of different age or sex, obviously influence the nature of radiation hazards. It is clear, however, that any radiation of gonads, and any substantial irradiation of other tissues, involves a chance of significant damage which requires assessment.

IV. General Recommendations Regarding the Medical and Occupational Irradiation of Human Beings. --(12) The Radiological Profession, through the International Commission on Radiological Protection has undertaken a valuable and responsible duty in defining maximum permissible limits of exposure for the main radiation hazards.

(13) The establishment of these maximum permissible levels for those who are occupationally exposed to radiation depends on the view that these are doses which, in the light of our present knowledge, do not cause detectable somatic injury in the individual irradiated; and on the consideration that the number of individuals concerned is small enough for the genetic effects on the whole population to be negligible. For the gonads, or for irradiation of the whole body, the levels are such as to exclude doses greater than 0.3 rem in any week or 3.0 rem in any 13 weeks, or a sustained irradiation rate greater than 5 rem per year. These values imply that no total dose of over 50 rem will have been received by the gonads by the age of 30, or of over 200 rem by the whole body by the age of 60, in any occupationally exposed person.

As regards irradiation of the whole population, it is considered prudent to limit the average dose to germinal tissues from artificial sources to the order of magnitude of that received from all natural sources.

(14) In considering the extent to which the population is irradiated for medical purposes, it is essentially the genetic hazard which is involved although it seems possible that in certain circumstances somatic injury may occur occasionally after low doses of radiation arise. Otherwise, the relevant dose is that indicating the mean gonad irradiation among the population as a whole up to the end of the average reproductive period.

(15) The extent of such genetic irradiation from diagnostic procedures has been found to be equal to at least 100% of all natural radiation in two countries and that from a third equalled at least 22% of this figure. Even before obtaining more exact values for these and other countries, it is clear that the exposure can be substantial in countries with extensive medical facilities, and that it is essential to consider any ways in which this exposure could be reduced without detriment to the existing or developing value of medical radiology.

(16) The Committee is therefore anxious to obtain the help of radiologists in suggesting through appropriate governmental channels any methods by which this total exposure could be reduced and in estimating the amount of reduction that might be expected from any such methods. In particular it

would be valuable to know how much the radiation to the gonads could be reduced: (a) by improved design or shielding of equipment, (b) by fuller training of any individuals using radiographic or fluoroscopic equipment, (c) by any local shielding of the gonads that is practicable, especially during abdominal or pelvic examination, (d) by the use of techniques involving radiography rather than fluoroscopy when full information can be obtained by this means, (e) by improvement of administrative arrangements designed to obviate unnecessary repetition of identical examinations of the same subject, (f) by a general study of certain medical conditions such as that of peptic ulcers, to identify the circumstances in which the establishment of a radiological diagnosis has or has not a definite influence upon the treatment or prognosis given.

V. Summary. --(1) The Scientific Committee on the Effects of Atomic Radiation established by the United Nations General Assembly accepts the view that the irradiation of human beings, and especially of their germinal tissue, has certain undesirable effects.

(2) Information received so far indicates that, in certain countries (Sweden, United Kingdom, United States of America), by far the most important artificial source of such irradiation is the use of radiological methods of diagnosis and that this may be equal in importance to radiation from all natural sources. It is possible that such radiation may be having a significant genetic effect on the population as a whole.

(3) The Committee is fully aware of the importance and value of the medical use of radiations but wishes to draw the attention of the medical profession to these facts and to the need for a more accurate estimate of the amount of exposure from this source. The help of the medical profession would be most valuable to make it possible to obtain fuller information on this subject.

(4) The Committee would be particularly grateful for information through appropriate governmental channels on ways in which the medical irradiation of the population can be reduced without diminishing the true value of radiology in diagnosis or treatment. (Maximum Permissible Radiation Exposures to Man, A. M. A. Arch. Indust. Health, 15: 353-355, April 1957)

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Anatomic Changes in the Heart Resulting From Cardiac Massage

During the past decade there has been a more accurate recognition of the frequency with which cardiac arrest (asystole and ventricular fibrillation) occurs together with a heightened interest in the problem of cardiac resuscitation. Data from several centers indicate an apparently disturbing

rise in the incidence of this catastrophe. While Zoll and associates have recently advocated the use of external electrical stimulation of the heart, the consensus is that cardiac massage is the treatment of choice in cardiac resuscitation.

A voluminous literature has accumulated on the theoretic, experimental, electrocardiographic, functional and clinical aspects, prophylaxis, and management of cardiac arrest and cardiac massage, but little attention has been devoted to the damage to the heart that may be sustained as a result of rhythmic intermittent manual compression. Reports of postmortem studies in patients dying after cardiac massage have concerned themselves mainly with the presence of pre-existing chronic heart disease which may have some influence on the unsuccessful effort. The iatrogenic cardiac changes have been practically ignored.

This report deals with 60 patients who died either during or following cardiac massage, and who were autopsied at the Cuyahoga County Coroner's Office. These cases came from practically every hospital within the jurisdiction of the office as well as from several dental offices. The massages were performed by a large number of different individuals at varying levels of medical training and experience (intern, resident, and visitant) and with widely divergent surgical experience (viz., internists, anesthesiologists, thoracic surgeons, and orthopedic surgeons). The series is thus broadly representative of cardiac massage as it is encountered in a large metropolitan area.

Excluded from the present study are patients with congenital or acquired cardiac malformation who died during cardiac surgery and those individuals who sustained mechanical injury to the heart as a result of accidental or homicidal violence. Thus all acute cardiac changes can be attributed to manual cardiac compression.

This report describes the cardiac structural changes resulting from massage and attempts to assess the etiologic importance of these changes in the ultimate fatal outcome. A comparison has been made between those who died during massage with those who survived the procedure for periods ranging from several hours to 10 days. Finally, a brief description of several of the clinical aspects of the problem is included in an effort to correlate anatomic alterations with various facets of the over-all situation.

The anatomic changes in the heart resulting from massage may involve any or all of the cardiac tissues, i.e., epicardium and epicardial fat, myocardium, endocardium, and the various portions of the coronary circulation. Cardiac vascular structures are extremely vulnerable to this type of trauma. Coronary arterioles, veins, venules, and capillaries are readily injured by repeated mechanical compression, and damage to these structures is responsible for the most frequently encountered gross and microscopic changes.

For purposes of classification, the degree of heart damage was characterized as negative, slight, moderate, or severe.

Negative. --A heart was considered to have sustained no damage from manual manipulation if the only abnormalities noted at autopsy consisted of a few subepicardial or subendocardial petechiae. While such small hemorrhages may have been traumatic in origin, they are indistinguishable from those found in persons who have died of shock or anoxia, and thus cannot be ascribed to trauma with any degree of certainty.

Slight. --The heart was considered to have sustained slight damage if it presented multiple subepicardial or subendocardial petechiae or zones of hemorrhagic extravasation. Small areas of intramyocardial hemorrhage were a frequent accompaniment.

Moderate. --Moderate damage was diagnosed in the presence of extensive subepicardial or subendocardial hemorrhagic extravasation accompanied by prominent intramyocardial hemorrhage.

Severe. --Damage was considered severe when gross laceration of the heart or a major structure was present. In all such cases the subepicardial, subendocardial, and intramyocardial hemorrhagic extravasation was striking.

Cardiac massage is a unique type of trauma. It differs in its mechanics from accidental cardiac contusions and experimental injuries. In these types of injury, the trauma consists of a single severe blow or crushing impact. The damage in cardiac massage arises from multiple compressions of the heart carried out with moderate force. The actual number of "squeezes" involved in some cases must be numbered in the thousands (20 to 50 compressions per minute for periods of over an hour).

Repeated rhythmic manual compression of the heart can result in varying degrees of myocardial damage and injury to the coronary vessels.

The mechanism of myocardial damage is probably a combination of direct muscular squeezing and the hydrostatic effect of suddenly increased intracardiac pressure. Repeated compression of a heart filled with incompressible fluid, especially if the direction of the squeeze is from base to apex rather than the reverse, can lead to laceration of the muscle as a result of the bursting force created within the cardiac chambers. Living cardiac muscle is friable and readily susceptible to fracture as a result of nonphysiologic stress. The coronary veins and capillaries are also vulnerable to the same type of trauma and are damaged when they are repeatedly squeezed against an unyielding base. The syncytial arrangement of the myocardium is such that sudden tension at one point can cause laceration at a distant site.

The extremely wide range of pathologic response in the hearts in the present study indicates that the single most important factor responsible for ultimate damage is not the duration of massage but rather the skill and care with which massage is carried out, a fact substantiated by experimental as well as clinical study. The constant emphasis on speed and "getting in fast" together with the emergency atmosphere which pervades the environment whenever cardiac arrest occurs must inevitably excite the less well-trained individual to hasty overpowerful efforts which can be seriously

traumatic. Experienced workers in the field are of the opinion that neither surgeon nor anesthesiologist is able to act quickly enough or efficiently unless he has previously given the problem thoughtful consideration and has carried out the procedure in the animal laboratory. Absence of anatomic changes in hearts restored to regular sinus rhythm after massage lasting more than an hour is proof that the procedure can be atraumatic in the proper (literally) hands.

Survey of the entire series serves to reemphasize several features which have been stressed in the past. Cardiac arrest may occur at all ages with all types of surgical procedures and at any time during the procedure--during induction of anesthesia, during surgical manipulation, and on emerging from anesthesia. All types of anesthetics and all combinations were involved in the patients making up the present study--inhalation, spinal and intravenous. Cardiac arrest occurs in individuals with normal hearts as well as in those whose hearts present evidence of chronic disease. The latter are more susceptible to arrest and damage. Massage is frequently responsible for massive diffuse hemorrhage in the neighborhood of healed infarcts. Cardiac asystole is much more frequent than ventricular fibrillation as a basis of arrest.

The ever-present specter of cerebral anoxia with its lethal or crippling sequelae indicates that constant vigilance is essential to establish immediately the presence of cardiac arrest. The 4 minute time limit repeatedly mentioned in the literature before which anoxic cerebral damage can be averted may well be too generous a figure. The most frequently incriminated etiologic factor in cardiac arrest is myocardial (with cerebral) hypoxia. Thus potential cerebral damage may well antedate the actual cardiac arrest and be progressive for some time before complete circulatory arrest occurs.

A need is apparent for establishing indications for cardiac resuscitation. No one questions the advisability of cardiac massage in cardiac arrest incidental to surgery or even potentially lethal natural cardiac disease. The wisdom of massaging the heart of a child whose head has been plainly crushed by a truck (tire tread marks readily seen on the face and neck) is questionable, to say the least. The same is true of a case of a suicidally cut throat in which practically all the major neck vessels had been transected. Deep concern has been expressed at the unbridled enthusiasm for cardiac massage with fear that an otherwise sound therapeutic procedure may be brought into disrepute.

Instruction in the theoretic and practical aspects of cardiac massage are prerequisites for successful cardiac resuscitation. (Adelson, L., A Clinicopathologic Study of the Anatomic Changes in the Heart Resulting From Cardiac Massage: Surg., Gynec. & Obst., 104: 513-523, May 1957)

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Diagnosis of Lung Cancer

The importance of bronchoscopic biopsy and, more recently, of anterior scalene lymph node biopsy in the diagnosis of lung cancer has been well documented. The examination of sputum and bronchial secretions for the presence of malignant cells has also been found to be of practical value by most investigators and the method is now almost universally accepted.

The purpose of this study was to determine the relative sensitivity of each of these diagnostic procedures and to investigate any relationship between these methods and the location, histologic type, and resectability of bronchogenic carcinoma.

It has been reported that a positive diagnosis of bronchogenic carcinoma may be established in from 26 to 60% of patients by means of bronchoscopic biopsy. The average sensitivity of this technique appears to be between 35 and 45%. In the authors' series, bronchoscopic biopsy was positive in 40% of the patients with primary lung cancer.

Most of the positive bronchoscopic biopsies were obtained from patients with squamous-celled carcinomas and this was attributed to the frequent involvement of major bronchi by this type of lung cancer while the peripheral location of most adenocarcinomas accounts for their frequent lack of detection by bronchial biopsy. It is obvious that this modality is of little value in the diagnosis of peripherally located carcinomas.

The majority of carcinomas of lower lobes or those arising in mainstem bronchi were detected by bronchial biopsy, but the percentage of success decreased sharply in the diagnosis of upper lobe cancers; only 2 of the 19 upper lobe carcinomas have been confirmed by this method. This is especially significant because upper lobe carcinomas are as common or more common than those arising in lower lobes.

In 1949, Daniels demonstrated the merits of anterior scalene lymph node biopsy in the diagnosis of intrathoracic disease. Anterior scalene lymph node biopsy has a double purpose: the histologic confirmation of the presence of a malignant tumor and the determination of inoperability. Although only 7 patients in this series had positive scalene node biopsies, the latter was the only histologic confirmation of positive cytologic findings in these 7 cases. In addition, the presence of metastatic carcinoma in these nodes constituted the sole criterion of inoperability in 4 of these 7 cases.

Previous reports have indicated that the incidence of metastases to anterior scalene lymph nodes is determined to a large extent by the location and the histologic nature of the carcinoma. It is significant to note that scalene node biopsy is most successful in the lung cancers which are most difficult to diagnose by means of bronchoscopic biopsy—that is, upper lobe carcinomas or carcinomas arising in small or peripheral bronchi. Conversely, the lower lobe tumors which seldom metastasize to the anterior scalene nodes are usually accessible to bronchoscopic biopsy.

Reports of cytologic smear studies illustrate considerable lack of uniformity of success in the detection of lung cancer. Shabart found malignant cells in the smears of only 44% of his patients with bronchogenic cancer, while others report positive results in over 95% of their patients. The average sensitivity appears to be from 70 to 85%. Malignant cells were found in the smears of sputum or bronchial aspirates of 69% of the 42 patients in the authors' series, and 88% of the patients had smears which were interpreted as positive or suspicious for malignant cells.

It has been shown that 100% of bronchogenic carcinomas originating in a mainstem or lower lobe bronchus were diagnosed by one or more of the three diagnostic modalities under discussion. The utilization of this diagnostic triad permitted a preoperative microscopic diagnosis of carcinoma in 90% of the total group of 42 patients in this series. It is now the routine practice of the authors to use all three methods simultaneously unless there is a specific contraindication to one or more of the procedures. (Umiker, W. O., DeWeese, M. S., Lawrence, G. H., Diagnosis of Lung Cancer by Bronchoscopic Biopsy, Scalene Lymph Node Biopsy, and Cytologic Smears: Surgery, 41: 705-711, May 1957)

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Radiation Therapy in the Treatment of Retinoblastoma

The problems posed by retinoblastoma are perplexing, fascinating, and tragic. This is a rare tumor with an incidence of 1 in 34,000 live births and some 3 in 10,000 first consultations in ophthalmic centers. It is congenital and 60% become manifest during the first 3 years of life while only about 5% occur after the age of 6 years. Children cannot complain of symptoms so that by the time the gray-white fundus reflex is seen the growth is large enough to be diagnosed by ordinary methods of examination, appearing on the retina as a flocculent white tumor with a granular surface which is crossed by thin looped blood vessels. Although sporadic cases are most common, familial and hereditary cases occur. In the St. Bartholomew's Hospital series there are records of one family where all the children were affected; in other groups it affected three generations. The mode of transmission is irregular. The risk to the children of an affected parent is very high; the risk to a second child of normal parents is said to be about 1%. Spontaneous regression can occur and Stallard records such a case where retrogression occurred after an attack of scarlet fever. The patient subsequently had two children both of whom had bilateral tumors, one of whom is recorded in this series treated by radon seeds. In about 20%, the disease is bilateral most often in hereditary and familial cases. The disease in the second eye is a true new formation and, although they may coincide, one tumor is much more advanced than the other. The maximum period recorded for the interval between the appearance of first and second tumors is 11 years.

Retinoblastoma is a rapidly growing, highly malignant tumor. The classic treatment of unilateral disease is enucleation of the eye, the result here depending entirely upon the condition of the optic nerve of the excised eye. A long part of the optic nerve must be obtained in order to place the section behind any nerve invasion. In a series of 116 eyes, Reese found such extension in 27%; in 8.5% it was beyond the line of excision. A most important point is that extension towards the brain may not be in continuity, but islands of growth may be separated by apparently unaffected parts of the optic nerve. In 95% of patients with unsuccessful enucleation, orbital recurrences will develop within 18 months. The outlook in these cases is very grave, although a few long survivals have been recorded. If the nerve is not invaded, prognosis will depend upon whether or not a tumor develops in the other eye. While there may be agreement as to the indications for enucleation in unilateral disease, when it is bilateral considerations become more difficult. In these cases the disease is usually more advanced in one eye than the other. It is, therefore, justifiable to attempt to conserve vision in the less affected eye if this can be done without jeopardizing the life of the patient. It follows also as a corollary that there is no object in keeping an eye which is blind or where the results of treatment result in blindness. For these reasons, and as a result of this experience, Stallard advises excision if one-third or more of the retina is involved in growth and the other eye is normal or less extensively involved than its fellow. He refers his surgically treated patients for postoperative roentgen therapy to the orbit of the affected side despite the risk of inducing a contracted socket following such therapy.

From the knowledge of the natural history of the disease, it is evident that treatment by irradiation may be called for under a variety of circumstances: (1) unilateral disease; (2) bilateral disease; (3) postoperative, when the pathologist reports involvement of the optic nerve; and (4) definite orbital recurrences not yet extending to the brain.

As in all other neoplastic processes the aim of radiation therapy is the homogeneous irradiation of the tumor-bearing volume to adequate dosage with sparing of the normal tissues. Retinoblastoma presents many problems from the point of view of technique because of its site of origin and the natural history of the disease. Retinal tissue has long been used by radiobiologists for investigation of radiation effects both in vivo and in vitro. The nerve tissues from which it arises and the sclera on which it rests are highly radioresistant. However, the problem is complicated because the tumor is situated in the posterior part of the eye and the normal tissues anterior to it—the lens, the uveal tract, and the cornea—have relatively low thresholds for radiation damage. Therefore, it is desirable to strike the neoplasm with a dose which will destroy it without producing irremediable damage to the eye.

Clinical results are given for two radon treated series and a CO 60 disk treated series. The advantage of the latter method is demonstrated.

(Williams, I.G., Radiation Therapy in the Treatment of Retinoblastoma: Am. J. Roentgenol., 77: 786-795, May 1957)

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Dental Problems of the Handicapped Child

The dental problem of the handicapped child has recently become the subject of much discussion. Dentistry has become aware of these unfortunate individuals and the difficulties and problems encountered in ministering to their needs.

The handicapped child may be afflicted with one of numerous conditions including cerebral palsy, muscular dystrophy, epilepsy, cretinism, mongoloidism and severe emotional block. Some of these children also may have varying degrees of mental retardation.

The amount of destruction in the mouth of the handicapped child will vary with the type and degree of handicap. Bruxism is frequently present. There is often an associated endocrinopathy with partial eruption of the teeth and abnormal gingival manifestations. Chronic discharging fistulas—the result of neglected caries—and hypoplastic enamel, affecting both the deciduous and permanent dentitions, frequently are encountered. Ectopic eruptions, crowded anterior teeth, crossbites and generalized malocclusions are often seen. Oral hygiene is often totally inadequate.

A valuable adjunct in the treatment of the handicapped child is the use of a general anesthetic. Endotracheal intubation will permit lengthy periods of general anesthesia which permits total treatment at one session. Every handicapped child brought to the dental office is not, and should not, automatically be considered a candidate for operative dentistry under a general anesthetic, however. Premedication and medication in conjunction with local anesthesia, together with patience, tolerance, and understanding, often will enable the child to accept treatment in the dental chair.

Handicapped children who are able to be treated in the chair generally can be grouped into three broad categories:

1. Children who are capable of being conditioned to accept total treatment in the chair.
2. Children who are capable of being conditioned to accept partial treatment in the chair.
3. Children who are completely incapable of being conditioned to accept any treatment in the dental chair.

The child in this group is totally inadequate physically or mentally or both. Complete treatment at one session under a general anesthetic has proved to be the only satisfactory manner in which dental service can be rendered to these unfortunate patients.

Providing dental care to the handicapped child is a difficult, but not insurmountable, problem. Many such children can be treated successfully

in the dental chair. Total treatment under a general anesthetic in the operating room should include the eradication of all foci of infection, the reestablishment of a hygienic environment, a maximal sodium fluoride treatment, and the placing of amalgam restorations on all carious as well as caries susceptible surfaces. This implies a series of contacting proximal restorations from the distal surface of the first deciduous molar to the mesial surface of the most posterior tooth in the quadrant as well as the correction and restoration of any remaining precarious fissures and pits. The mesial surface of the first deciduous molar and the distal surface of the deciduous cuspid should be included in the series of treatments whenever there is evidence of carious breakdown in these regions. When the remaining healthy enamel appears inadequate to support the usual type of restoration, full coverage of the crown is indicated. (Kelner, M., The Dental Problem of the Handicapped Child: J. Am. Dent. A., 54: 673-679, May 1957)

Therapy for Peripheral Arteriosclerosis

As surgical methods become available in the management of peripheral arteriosclerosis, the proper choice of treatment for a particular problem encountered becomes important. Such a choice necessitates an accurate appraisal of the pathology in the individual patient and a knowledge of the results to be expected from various methods of treatment.

Major surgery is justified only if life expectancy is adequate. The latest figures for the general population above 40 years of age are impressively high. How the general expectancy is affected by the presence of peripheral arteriosclerosis is not well documented. A study of 100 patients after lumbar sympathectomy, however, offers the encouraging figure of 65% alive at 5 years.

It is recognized that arteriosclerosis may be quite localized or "segmental" in portions of the arterial tree. This is true only of the severity of the lesion. A localization is most often demonstrated in the aortic bifurcation or the lower part of the superficial femoral artery. There are certainly some obstructions at other levels that are also fairly well localized. When arteriosclerosis is localized to a short segment of a limb artery, the process tends to progress slowly and is associated with a good prognosis not only for the limb, but also for the patient as a whole. The contrary is true in the face of the diffuse pattern. Here, the disease is apt to be widespread in both limbs as well as in the visceral arteries; progression is rapid and the prognosis is poor both for the limbs and for life expectancy, death usually resulting from coronary thrombosis. It should be reemphasized that the division into two patterns is relative, the disease being essentially a disseminated process.

The clinical setting at the outset often gives a clue to the pattern of involvement. Localized disease is apt to be present in patients whose symptoms began before the age of fifty. This is not true of diabetic patients in whom localized disease is less common than that in nondiabetic persons at any age. Segmental occlusion is likely when the presenting problem is mainly claudication associated with but little acral ischemia.

Segmental occlusions are not apt to give rise to gangrene regardless of the level involved. This is based upon the presence of unimpaired collaterals bypassing the occluded segment. The severity of acral ischemia is related to the state of another set of vessels—those which act as the ultimate distribution system for the distal parts. Gangrene follows obstruction of these ultimate arteries by a diffuse arteriosclerosis.

The aims of medical management of the patient with arteriosclerosis are: to find and treat concurrent disease; to prevent injury to the ischemic parts; and to treat thrombosis by anticoagulants. Medical treatment cannot be expected to change the circulatory status of the limb except in indirect ways, as by allowing one to wait for partial spontaneous improvement after thrombosis, by improving the condition of the heart or by correction of anemia or polycythemia. No vasodilators effective in arteriosclerosis are known by the author.

Lumbar sympathectomy is the most effective way to increase collateral flow to an extremity. It is applicable to many patients and can be used for many in whom arterial reconstruction is unsuitable. In the vast majority, improvement persists indefinitely once the initial problem is overcome. Thus, in the five-year study of 100 patients, no major amputation occurred after the first postoperative year. The operation offers great aid in the healing of superficial necrosis, especially in the distal parts of the limb. Claudication is improved in 75% of cases.

The presence of diabetes limits the results severely. Thus, in the follow-up study mentioned 56% of the diabetic patients died in the five-year period as against 27% of the nondiabetic patients; 30% of the former showed a poor result (including thigh amputations) versus 10% of the latter.

The operation appears indicated in the following circumstances: young patients, whether their problem is claudication or threatened necrosis, because the disease has more opportunity to progress in their long life span; old patients, if their circulatory status is deteriorating rapidly, provided the ischemia appears reversible; patients who have lost one limb, because of the frequency of a second amputation in them; patients with cutaneous necrosis; and patients with arterial thrombosis.

In spite of the disadvantages conferred by diabetes, diabetic patients stand in greater need of treatment than nondiabetic and the results are considered good enough to encourage the continued use of sympathectomy for diabetic as well as nondiabetic patients.

Sympathectomy is contraindicated if deep necrosis extends to bone proximal to the toes or in the presence of very large cutaneous lesions,

deep infection, extensive agglutinative thrombosis or rigor of the muscles. Sympathectomy should be delayed during the acute stage of arterial thrombosis until heparin treatment has been given for some days; otherwise, the limb may be made worse, usually through an extension of the thrombosis. The operation cannot be counted on to influence the outcome of an amputation.

Reconstitution of the major artery by endarterectomy or graft replacement represents a direct attack upon the diseased vessel. In cases of obstruction, arterial reconstruction certainly brings more blood to the part than sympathectomy can. Disabling claudication is, therefore, a frequent indication for such a procedure, especially when it prevents the patient from earning his livelihood. A less frequent indication is the presence of a necrotic lesion that cannot be helped by sympathectomy.

The necessary prerequisite to arterial reconstruction is the demonstration of a localized lesion in a large artery. So far, efforts have not been successful distal to the popliteal artery.

Extensive necrosis or necrosis involving bone generally comes to amputation. A toe or foot amputation can be considered if the necrosis is demarcated with but little evidence of ischemia at the proposed operative site. A transmetatarsal amputation is often more successful than a toe amputation. A successfully healed transmetatarsal amputation usually remains sound allowing strenuous use for years to come.

When the limb must be removed at a level higher than the foot, the saving of the knee joint is a major consideration. Here, particularly, one must have evidence of good circulation at the proposed site if one is to avoid delayed healing and a tendency to late ulceration. (Edwards, E. A., Choice of Therapy for Peripheral Arteriosclerosis: New England J. Med., 256: 875-880, May 9, 1957)

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Dermatological Therapy

So many new remedies have been advocated and the approach to the treatment of skin diseases has changed so radically in the last few years that the main concern is to select the more significant and important changes for discussion.

For 50 years, Roentgen rays have been used as a procedure of choice in epilating the scalp hair in tinea capitis. The technique is an exact one necessitating the utmost caution and skill, but if the precautions which are well known are followed, the result is a most satisfactory solution to a difficult problem. The same modality is often a most important agent in treating selected patients with acne vulgaris, verruca vulgaris, epithelioma, hemangioma, eczema of various types, lichen planus, and other dermatoses and

skin conditions. Dermatologists are trained to utilize ionizing radiations with emphasis on safety.

Electrosurgical procedures, particularly monopolar electrodessication, has for a generation been a useful tool for the destruction of verrucae, certain nevi, many other benign growths, and as the integral part of a routine technique in the removal of basal-cell epithelioma. This modality, together with the occasional use of bipolar cutting current, continues to be a most useful method for a rapid, relatively inexpensive, and ambulatory procedure for satisfactory treatment of many of the common and troublesome tumors of the skin.

Many drugs remain useful and undiminished in popularity. The combination of salicylic and benzoic acids in the formula known as Whitfield's ointment, or in a tincture, is still a strong contender for the most useful prescriptions in chronic superficial fungus infections. Tar—a time-honored agent—is still used either alone or in combination with other drugs in the management of many of the stubborn eczematous eruptions. Internally, antihistamine drugs continue to be employed as most useful in the management of inflammatory dermatoses, particularly, when pruritus is a troublesome symptom. Arsenic and gold which were commonly prescribed as late as 20 years ago for a number of skin diseases are now rarely employed.

Mercury is still employed, but less frequently. Bismuth remains a valuable drug in selected cases.

Syphilis. In the field of syphilology, significant advances have been made both in diagnosis and in treatment. In the United States, treatment with penicillin alone has superseded combination treatment using penicillin and heavy metals such as arsenic and bismuth, although in some European countries, combined therapy is still advocated by many.

Skin Tuberculosis. Use of the isonicotinic acid derivatives has revolutionized the treatment of tuberculosis of the skin. Isoniazid in the oral dosage of 3 to 8 mg. per kilo of body weight daily has become the treatment of choice for lupus vulgaris supplanting calciferol and other older remedies. Other true forms of skin tuberculosis, such as scrofuloderma, tuberculosis colliquativa, tuberculosis verrucosa cutis, tuberculosis fungosa, and erythema induratum respond to this simple treatment. Side effects and toxicity are minimal.

An interesting sidelight on this therapy is that the so-called tuberculids do not respond. Quite possibly, the introduction of this specific therapy may completely change the concept of tuberculids forcing inclusion of many conditions now classified as "ids," (such as lupus miliaris disseminatus facei, rosacea-like tuberculid of Lewandowsky and others) into nontuberculous etiologic categories.

Vitiligo. At present, 8-methoxypsoralen (8MOP) is being used topically and orally. Fitzpatrick reported on 86 patients treated during the past 3 years, 31% of whom attained a degree of repigmentation (not necessarily complete),

satisfactory to the patient and investigators, and 54% of whom had obtained moderate repigmentation, but were continuing therapy. Fifteen percent of the patients became discouraged and discontinued therapy after having obtained some repigmentation. Severe local reactions and cases with questionable toxic liver damage have been reported. The disadvantages also usually include incomplete repigmentation, recurrence when treatment is stopped and hyperpigmentation of normal skin areas.

Lupus Erythematosus. Evidence indicates a close relationship between the discoid form and the disseminated or systemic variety. However, for practical purposes, the distinction between the relatively benign discoid type and the threatening systemic disorder should be continued. It is true that occasionally the features of discoid lupus erythematosus will merge into systemic lupus; also, there are many instances on record of a change from the benign type to a fulminating and rapidly fatal acute disease.

In the treatment of discoid lupus erythematosus and, to lesser degree, the systemic form, antimalarial drugs have become the treatment of choice. Atabrine, 100 mg. once or twice daily, chloroquine, 250 mg. one or more times daily are given in courses often alternating from one drug to another. This type of treatment has virtually supplanted heavy metal therapy previously used.

The management of patients with systemic lupus erythematosus is one of the most difficult confronting the physician. Such patients require many forms of supportive treatment. There is no question that steroid therapy has contributed a great deal. The decision when to administer the steroid and in what dose is an individual problem.

Fungal Infections. The recognition of disease syndromes caused by many species of dermatophytes has placed the management of superficial fungus infections on a much more scientific plane. The necessity to avoid sensitizing drugs in patients with inflammatory manifestations in which T. mentagrophytes has been isolated is a case in point. In contrast, patients with T. rubrum infections tolerate most drugs with impunity. Asterol in tincture or ointment, unsaturated fatty acids (undecylenic and propionic) in ointment and powder and nystatin (in moniliasis) are additions to the therapy of superficial mycoses which seem destined to remain.

Most systemic fungus diseases still remain as difficult to manage. In blastomycosis, some headway has been made by the administration of stilbamidine and related compounds.

Dermabrasion. Dermabrasion for the removal of acne scars, tattoos, or other superficially located skin lesions, although introduced by Kromayer in 1905, has shown a renaissance in the past 3 years with the introduction of new tools and techniques. The sandpaper technique as advocated by Iverson in 1947 and McEvitt in 1948 has been almost completely supplanted by the rotary brush technique popularized by Kurtin in 1952.

Chemosurgery. Dermatologists, always interested in adding to their armamentarium in the management of skin cancer, have utilized the

chemosurgical technique of Mohs for selected cases. This method is especially effective in recurrent and radioresistant epitheliomata and in areas where scalpel surgery or electrosurgery is not feasible.

Cathode Ray Therapy. The field of radiotherapy has broadened by the introduction of the Van der Graaff accelerator into clinical dermatology. With this apparatus, high energy cathode rays are utilized to treat superficial malignancies, particularly mycosis fungoides and Kaposi's sarcoma, as well as incapacitating dermatoses, such as disseminated neurodermatitis, exfoliative dermatitis, and widespread psoriasis. The biologic effect of the rays is similar to that of Roentgen rays. The advantage lies in the concentration of effect in the superficial portions of the skin; with a setting of 2,500,000 volts, the effect is localized for practical purposes to the external 10 mm. Using a sled technique by which the patient is passed under a beam source at a constant rate of speed, uniform dosage may be readily administered to the entire body surface.

Corticoids. Corticoid therapy has become well established in the treatment of pemphigus, systemic lupus erythematosus, and the self-limited allergic eruptions. More recently, severe cases of herpes zoster have been included. These drugs are still of questionable value in dermatomyositis and scleroderma. Neurodermatitis and psoriasis are temporarily benefited, but relapses of a severe nature after withdrawal of the drug are frequent. The authors believe that the steroids administered systemically are contraindicated in the treatment of psoriasis and for most eczematous eruptions. Toxic manifestations and side effects, such as disturbed water balance, adrenogenital syndrome, osteoporosis and activation of duodenal ulcers, have been shown to be due to excessive dosage or too prolonged a course.

In the field of topical therapy, the introduction of hydrocortisone and the newer analogs has been found quite useful. The antipruritic and anti-inflammatory effects have been widely utilized in the dermatologic field, particularly in the treatment of neurodermatitis and contact dermatitis. The low incidence of sensitivity makes these compounds superior to many of the previously used agents, such as benzocaine, phenol, or the anithistaminics. The danger of lowered bacterial resistance is countered by the addition of an antibiotic, such as bacitracin or neomycin to the topical preparation. The danger of toxic effects from absorption must be considered, particularly in the use of flurohydrocortisone.

Antibiotics. The parade of new antimicrobial drugs continues. This is fortunate, particularly in the treatment of staphylococcal infections. The staphylococci, so often the cause of skin infections, seem to have the propensity to develop resistance to any agent used against them so that new weapons are continually needed. Two of the newer drugs effective against most strains of staphylococci are erythromycin and novobiocin.

One dermatologic side effect of the widespread and sometimes indiscriminate use of antibiotics has been the increase in cases of moniliasis,

particularly in the genitocrural, anal, and oral regions. This phenomenon may be due to the effective destruction of bacteria in the gastrointestinal tract. The yeast-like organisms, untouched by the antibiotic, flourish and are a potential source of danger. One attempt to control this situation is to administer a moniliacidal drug, such as nystatin in conjunction with the antibiotic.

Enzymes. Enzymology as it refers to dermatology is a subject of promise. Because of the complex biochemical mechanisms involved and the physical difficulty encountered in experimental work, progress is slow, but has already yielded valuable information. (Lewis, G M., Torre, K., Recent Advances in Dermatological Therapy: Am. J. Med. Sci., 233: 573-579, May 1957)

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IGY World Warning Agency

Beginning July 1, 1957, the National Bureau of Standards radio forecasting center at Fort Belvoir, Va., will serve as the focal point of a worldwide communications network for the International Geophysical Year. From this point, warnings will be flashed to scientists throughout the world to redouble their observational efforts in anticipation of unusual activity in cosmic rays, aurora, earth magnetism, and radio propagation disturbances.

The warnings will be based mainly on worldwide observations of the surface of the sun and on soundings of the ionosphere, the electrically charged upper portion of the atmosphere. When the surface of the sun erupts, shooting out flames for hundreds of thousands of miles, the earth's atmosphere is showered with vastly increased quantities of particles from outer space. This solar bombardment not only causes magnetic compasses to misbehave, but also produces brilliant displays of Northern Lights and causes changes in radio communication through its effect on the ionosphere.

The NBS field station has been selected as the IGY World Warning Agency by the U. S. National Committee for the IGY. Organized by the National Academy of Sciences - National Research Council, the U S. National Committee is planning and directing United States participation in the IGY under the chairmanship of Dr. Joseph Kaplan. The worldwide warning network is under the general direction of Alan H. Shapley of the NBS Boulder (Colo.) Laboratories, who is serving as Vice Chairman of the United States National Committee for the IGY and international coordinator of IGY communications. The IGY World Warning Agency at Fort Belvoir is headed by Roger C. Moore of the NBS staff.

In addition to the NBS station at Fort Belvoir, the international network includes the radioteletype network of the World Meteorological Organization, virtually all of the commercial communications facilities throughout the world,

government facilities (such as military channels and in the United States, the Civil Aeronautics Administration), and special messages broadcast by stations WWV and WWVH (on the NBS radio propagation forecast channels) and their counterparts in other countries. This elaborate and far-reaching network has been set up so that IGY scientists, no matter how remote the site of their work—from Arctic outposts to Pacific islands or the Himalayas—can conduct their experiments simultaneously. Since January 1957, the warning system has been undergoing a week of advance trials each month.

The International Geophysical Year of 1957-58 has been planned as a massive coordinated assault by the scientists of the world upon the mysteries of this planet. From July 1, 1957 through December 31, 1958, several thousand scientists representing over 50 nations will make simultaneous worldwide measurements of the earth's interior, its crust, its oceans, its atmosphere, and its immediate cosmic environment. The results of this international enterprise should help answer questions as to the size and shape of the earth, how and where weather is generated, whether the world will continue to grow warmer, why the pull of gravity varies over the earth, the origins of earthquakes, and the causes of radio blackouts.

Because it is not economically feasible for scientists to make intensive worldwide observations every day during the IGY, a series of Regular World Days has been selected in advance for more detailed simultaneous observations. These Regular World Days will be supplemented from time to time by two types of warnings—Alerts and Special World Intervals—which the IGY World Warning Agency will issue when major solar-terrestrial disturbances are expected.

Alerts will be used to notify IGY scientists that a Special World Interval may be called in a few days. The Special World Interval will be called on 8 hours' notice when there is a strong possibility that a major solar-terrestrial disturbance will begin within 24 hours after the start of the interval. The interval will end when the disturbance subsides, or in about 48 hours should the predicted disturbance not materialize.

IGY programs in ionospheric physics, geomagnetism, solar activity, cosmic rays, and aurora will be intensified during Special World Intervals. Some special cosmic ray balloon flights and rocket launchings may be made during these periods, with experiments on a standby basis, awaiting notification of special conditions from the world-warning center.

Each day, by 1600 UT (Universal Time), scientists at the World Warning Agency will decide whether to call an Alert or Special World Interval for 0001 UT the following day or not. This decision will be made with the advice of ionospheric and solar observatories and communications forecasting centers both in the United States and abroad.

If solar conditions justify calling an Alert or Special World Interval, the World Warning Agency will issue messages to Regional Warning Centers in The Netherlands, France, Germany, Japan, and the USSR, and then to Associate Warning Centers in Australia, Antarctica, and Alaska. From these

centers, the warnings will be flashed to every IGY field station throughout the world.

The forecasting center in Virginia will also serve as the Western Hemisphere Regional Warning Center. In the United States itself messages will be put on the U. S. Weather Bureau communications system so that all U. S. Weather Bureau stations will be alerted. It is then the task of each Weather Bureau station to inform all the other IGY field stations in its locality. The special radio propagation transmitting stations—WWV and WWVH in the United States, LOL in Argentina, and JJD in Japan—are expected to serve as a secondary method of informing the world IGY stations of Alerts and Special World Intervals. (Technical News Bulletin, Vol., 41, No. 5, May 1957, NBS)

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Applicants Desired for Course of Instruction in Pharmacy Technic

Background

It is anticipated that, as a result of the release to inactive duty of large numbers of registered pharmacists (two-year inductees), the number of personnel on board in this technical specialty will be insufficient to meet future operational requirements. This problem has been compounded by expanding requirements in this specialty and by the fact that training quotas for this course of instruction continue to remain unfilled. Therefore, it is incumbent upon each command to give wide publicity to the continuing need for qualified applicants for training in this specialty.

Information

Course Title:	Pharmacy Technic
Length:	38 weeks
Subjects:	Principles of Pharmacy Operative and Dispensing Pharmacy Pharmaceutical Mathematics Inorganic and Organic Pharmaceutical Chemistry Parenteral Preparations
Obligated Time:	24 months upon entry into course
Eligibility Requirements:	All HM1, HM2, HM3's with a combined *GCT ARI score of 110

Command Responsibility

1. Solicit and encourage applications for subject course utilizing all available publicity media.

2. Evaluate each prospective candidate relative to educational background, practical experience in the technical specialty requested, positive motivation, career motivation, physical and mental fitness.

3. Endorse all applications so that the results of paragraph (2) above are reflected.

Action by Applicants

1. Prepare application in accordance with the sample contained in BuMed Inst. 1510.4B and comply with instructions contained in the Catalog of Hospital Corps Schools and Courses, BuMed Inst. 1510.9.

Reference

Attention is invited to BuMed Notice 1510 of 15 May 1957 which lists training requirements for all Medical Technical Specialties including Pharmacy.

* Applications for waivers of GCT and ARI test scores will be considered.
(ProfDiv, BuMed)

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Standardized Drugs Now Available - Armed Services Medical Stock List

Acetylsulfisoxazole Suspension, 11-1/2% is presently available to provide a standard chemotherapeutic pediatric preparation with a wide spectrum antibacterial action. This "sulfa drug" seems to be almost free of side reactions such as drug dermatitis, nephritis, and blood dyscrasias, which makes it the safest one so far. It has proven to be a very valuable "starting" drug in urinary tract infections, being successful even in some of the more refractory types, such as proteus, pseudomonas aeruginosa, et cetera.

Corticotropin Injection, Repository is the most consistently active subtype of ACTH prepared in a menstrum designed to give continued, even, absorption. The 5 cc. bottles contain 40 USP units per cc. so that the desired dosage can easily be adjusted. This is useful in such diseases as recurrent status asthmaticus, Stevens-Johnson disease, exfoliative dermatitis and acute disseminated chorioretinitis; especially when corticosteroids are unsuccessful. It should be mentioned again that, whereas the steroids, over long periods of time, may produce adrenal cortical atrophy, corticotropin does not. This is not an intravenous preparation; however, such a drug will also remain on the standard list.

Chlorpheniramine Maleate Tablets are now standard in 4 mg. scored size. This halogenated antihistamine is probably better known as chlortrimeton and seems to have fewer disturbing side effects in relation to its therapeutic effect. It has been shown to be quite effective in most cases, however, some will require the standardized stronger pyribenzamine (Tripelennamine) or benadryl, (Diphenhydramine), for full control. It will still be necessary to evaluate each individual case after being on this drug for some time, however, before allowing the patient to drive a car, pilot a plane, et cetera. Some people wtill get drowsy as a result of cumulative effect.

(ProfDiv, BuMed)

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Photographs of Newborn

The Commanding Officer, U. S. Naval Hospital, Oakland, Calif., sends a letter of congratulations to a new father in the service, enclosing a photograph of the serviceman's wife and newborn infant. The aspects of this "letter" program, as outlined in Article 1405. 5 Public Information Manual, create an excellent morale stimulus among members of the Naval service deployed at sea and overseas bases far removed from personal contact with their wives, friends, and relatives in Continental United States.

The value and far-reaching effects of a "letter-photograph" were particularly noted by the Commanding Officer of the USS Firedrake in the Western Pacific when such a letter reached a member of his command, and ". . . . . hoped such a highly commendable practice will be continued."

(Medicare Div., BuMed)

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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American College of Cardiology
Sixth Annual Meeting

Rear Admiral George W. Calver, MC USN (Retired), presently the Attending Physician, Congress of the United States, was elected President-Elect of the American College of Cardiology at a meeting held during the Sixth Annual Meeting of that College at the Willard Hotel, Washington, D. C., May 15 - 18, 1957. At this meeting, Dr. Calver served as the Local Convention Co-Chairman and was Moderator of a Scientific Session entitled "Symposium on Diagnostic Methods."

The Navy is justly proud of this high honor bestowed on this member of the Navy Medical Department. (TIO, BuMed)

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From the Note Book

1. All Hands, the Bureau of Naval Personnel Information Bulletin of March 1957, describes, within limitations, what guided missles are and how they are likely to affect every man in the Navy today and tomorrow. This information is "good reading" and it is recommended that all Naval personnel obtain and read this March 1957 issue of All Hands. (Editor)

2. The Hospital Administration Division of the Bureau commenced operations on March 15, 1957. In the fulfillment of its mission, the division attempts to identify problem areas and to seek solutions to them by the application of modern methods. This includes research in various techniques and trial applications of methods devised. The division also sets up a system of performance evaluation and reviews and makes recommendations concerning procurement of equipment to serve administrative purposes.

The division provides a consultation service to those activities considering the adoption of new administrative systems and/or equipment. It welcomes ideas from any source and such ideas are subjected to analysis and, if applicable, trial applications are carried out. (TIO, BuMed)

3. From a modest beginning in 1923, the prosthetic dental service has increased from nine authorized laboratories in 1926 to 156 in 1957. On April 19, 1957, approximately 554 dental prosthetic technicians were on active duty to operate dental prosthetic laboratories throughout the Navy. (TIO, BuMed)

4. The most common category of congenital heart disease—openings in the heart's middle partitions that let blood leak from its left to its right chambers—can be exactly located by a technique of injecting an indicator dye into the left chambers. The new approach is unique because it places the dye injection on the left side of the heart at, or near, the leak and in the path of its outflow.

"Conventional techniques, involving the sampling of blood from right heart chambers sometimes fail to provide sufficiently accurate preoperative information." PHS, HEW)

5. Plans are moving ahead for extending the cytologic test program—already successfully applied to uterine cancer—to include also lung, gastrointestinal, urinary, and prostatic cancer. The cytologic test has proved highly successful in detecting cancer of the uterus in a pilot project in Memphis, Tenn., and research is being continued on its application to cancer of this site through six additional projects established in other cities. In Memphis, the first examination of 108,000 women led to discovery of about 800 cases of uterine cancer. (PHS, HEW)

6. The Public Health Service announced that 3.6 million cubic centimeters (doses) of new poliomyelitis vaccine were released during the week ending May 10. Communities are urged to move ahead in their vaccination programs as rapidly as supplies permit. It is recommended that communities begin their programs with first injections as supplies become available without waiting to accumulate reserves for second injections, and that until supplies become more plentiful preference continue to be given to those under 20 years of age and to pregnant women. (PHS, HEW)

7. This article reports a series of 23 patients in whom delayed resolution and partial collapse of the right upper lobe followed bacterial pneumonia. In each case the possibility of a neoplasm was considered. Thoracotomy performed in 2 of the early cases revealed unresolved pneumonia. On the basis of certain clinical and laboratory findings, surgery has been avoided in subsequent cases and follow-up studies have indicated that none of the patients had a lung tumor. (New England J. Med., Vol. 256, No. 18, 2 May 1957; W.M.M. Kirby, M.D., et al)

8. The first year results from the use of a stannous fluoride-containing dentifrice at Bloomington, Minn., corroborate the original work by Muhler et al in Indiana and shows the effectiveness and safety of stannous fluoride used in an abrasive compatible dentifrice. (J. A. D. A., May 1957, W. A. Jordan, D.D.S., J.K. Peterson, D.D.S.)

9. A clinical study of radiation cataracts and the relationship to dose appears in Am. J. Roentgenol., May 1957; G. R. Merriam, Jr., M.D., E. F. Focht, B.A.

10. The characteristics of an outbreak of infectious hepatitis in the Arctic are described in New England J. Med., 9 May 1957; T. R. A. Davis, M.D.

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BUMED NOTICE 6230 10 May 1957

From: Chief, Bureau of Medicine and Surgery
To : All Ships and Stations

Subj : Status of Poliomyelitis Vaccination Program for military personnel and dependents; request for onetime survey of, and report on

Encl : (1) Instruction for Conduct of Survey
(2) Format for report to BuMed

This notice desires statistical data on the status of immunization against poliomyelitis for military personnel and dependents.

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SECNAV INSTRUCTION 6240.4 15 May 1957

From: Secretary of the Navy
To : All Navy and Marine Corps Activities, Continental U.S.

Subj : Milk and Milk Products; minimum sanitary requirements in Navy and Marine Corps food establishments

Ref : (a) Military Standard MIL-STD-175, Special Sanitary Requirements for Refrigerated Bulk Milk and Milk Products Dispenser Cabinets, Dispenser Cans, and Can Filling Machines, of 12 Apr 1956 (NOTAL)
(b) Chapter 1, Manual of Naval Preventive Medicine, NavMed P-5010-1, Food-Service Principles (NOTAL)

Encl : (1) Minimum Sanitary Standards to be Observed in Use of Milk and Milk Products for Beverage Purposes in Continental U.S. Activities
(2) Minimum Sanitary Standards to be Observed in Use of Certain Milk Products for Other than Beverage Purposes

This instruction promulgates minimum sanitary standards concerning the procurement and use of milk and milk products in Navy and Marine Corps food establishments in continental U.S. activities. (Extracontinental shore activities and the forces afloat are not affected by Enclosure (1) of this Instruction.) For continental U.S. activities, BuMed Instruction 6240.2, Subj: Milk and milk products; sanitary requirements for use of is canceled.

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DENTAL SECTION

Fluoridation Program in Yokosuka Area

A program for the reduction of tooth decay in dependent children of military personnel was completed recently by Dental officers of the U. S. Naval Dental Clinic, Yokosuka, Japan. A suitable sodium fluoride solution was applied topically to the teeth of 707 dependent children of the area.

Although clinical results of this program cannot be known for some time, the immediate benefit for morale and goodwill was most gratifying.

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Dental Notes

BuMed Notice 1510 of 2 May 1957 - Outservice Training Program; recording of educational achievement.

Purpose. To invite attention to the requirement for recording information concerning courses successfully completed under the provisions of BuMed Instruction 1510.7A. In order that full benefits will be derived from the educational achievements of naval personnel in their off duty time, it is essential that this information be readily available in official records.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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RESERVE SECTION

Retirement Credits for Completion of Correspondence Courses by Inactive Reserve MD Personnel

BuPers Instruction 1820. 3A of 24 April 1957 promulgates information concerning the granting of retirement point credits to officers and enlisted personnel of the Naval Reserve for satisfactory completion of correspondence courses. This directive cancels and supersedes BuPers Instruction 1820. 3 of 3 July 1953. The new provisions for granting retirement point credits are:

a. Naval Reserve officers completing officer correspondence courses will be granted retirement credit as follows:

(1) Courses evaluated at twelve retirement points or less: credit will be granted on the satisfactory completion of the entire course; credit will apply as of the date the last assignment is deposited in the mails by the enrollee.

(2) Courses evaluated at more than twelve retirement points: credit will be granted on satisfactory completion of (a) each twelve-point unit of the course and (b) the final unit which may be less than twelve points. Credit applies as of the date the last assignment of each unit is deposited in the mails by the enrollee. For example, with a fifteen-assignment course evaluated at thirty points (two points per assignment), credit will be granted on satisfactory completion of (a) the first six assignments, (b) the second six assignments, and (c) the last three assignments.

b. Enlisted personnel completing either officer or enlisted correspondence courses will be granted retirement points only upon satisfactory completion of the entire course. The points for each course will be prorated by assignment, and the points for each assignment will be credited to the individual as of the date the assignment is completed, but only after satisfactory completion of the entire course. The date an assignment is completed shall be the date on which the assignment is deposited in the mails by the enrollee.

Retirement point credit will not be granted to Reserve personnel in the following categories:

a. Reserve personnel on active duty (including training duty) receive retirement point credit by reason of their active duty. Inactive duty personnel receive a retirement point for each authorized drill or NROS class. Hence, to avoid duplicate credit, retirement credit cannot be given for correspondence courses completed while on active duty or training duty, or as part of an authorized drill or NROS class. The Chief of Naval Personnel

has on occasion approved the use of correspondence course material in drills and NROS courses as a means of further qualification in the professional area, but under conditions that preclude the granting of duplicate retirement credit. This is also applicable under this instruction.

b. Reserve personnel are ineligible to accrue retirement credit while they are on the Inactive Status List; hence correspondence courses completed in this status will not earn retirement points. This does not preclude Inactive Status personnel from taking courses in order to improve their professional qualifications as reflected in their official records.

c. Retirement point credit will not be granted for retaking a correspondence course unless the Chief of Naval Personnel specifically designates the course as one that may be repeated for credit.

d. Naval Reserve officers will not be granted retirement credit for completion of enlisted correspondence courses.

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Summer Training of Students Commissioned as Ensign 1995 (Medical) USNR

During June 1957, approximately 307 undergraduate medical students commissioned as officers in the Naval Reserve will report for active duty for training in Research Clerkship, Clinical Clerkship, and NROTC Cruises for periods not to exceed 45 days with full pay and allowances of their rank.

This year, Research Clerkship Training will be conducted at 12 different Medical Research activities throughout the United States where courses of instruction will provide trainees with orientation and indoctrination into medical research with a detailed review of the research program being conducted at the activity. Medical students will serve as assistants in actual laboratory research on a specific project under way at the time and will perform on-the-job duties commensurate with their professional attainment. This training is available to Ensign (Medical) officers who have completed at least their first year of medical school.

Ensign (Medical) officers who have completed their second year of medical school will participate in Clinical Clerkship training at fourteen different Naval Teaching Hospitals throughout the continental Naval Districts. Clinical Clerkship training has been developed to provide indoctrination and orientation in Naval medicine, rotation through the major professional services and performance of on-the-job training duties commensurate with the students' professional attainments. It affords the prospective medical officer an excellent insight into the merits of a career in Naval medicine. Since its inception in fiscal year 1955, this program has enjoyed a healthy participation which justifies its continuation from year to year.

A summer training cruise for 50 medical students who have completed their third year of medical school has been authorized by the Chief of Naval

Personnel on board capital ships participating in the 1957 NROTC summer training program. Representing some fifty medical schools, these officers will receive indoctrination and orientation in the practice of Naval medicine aboard ship under the supervision of experienced Naval Medical officers. In addition to enjoying life at sea, these future Medical officers of the Navy and Naval Reserve are looking forward to liberty in a number of foreign ports scheduled for visit by the participating ships of the fleet.

All summer training authorized for Ensign 1995 (Medical) officers is within established quotas allocated to commandants of continental naval districts.

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PREVENTIVE MEDICINE SECTION

Immunization Certificates

A recent incident involving delay of a military aircraft and passengers in a foreign country because the name of the manufacturer and lot number had not been recorded for yellow fever vaccination on the DD Form 737 (1 Sep 1953), United States of America Department of Defense Immunization Certificate, points up the necessity for medical officers to carefully check these forms before signature.

The World Health Organization International Sanitary Regulations agreed to by most countries in which military travel is possible specify the requirements of each country for vaccination against yellow fever, smallpox, and cholera. All countries require the name of the manufacturer and lot number to be recorded in the case of yellow fever vaccine and the certificate is not valid without this information. This is reflected in current immunization instructions.

Countries having stringent requirements for vaccination against yellow fever for travelers are concerned with preventing ingress of the disease to their country. In those countries where Aëdes aegypti is present, entry of a human with the disease in the incubation stage presents the distinct possibility of infecting the native vector and passing the disease to other humans and animal reservoirs. Once established in this fashion, disastrous human epidemics can occur; control becomes a long and costly process.

For this reason, a traveler arriving with an improperly completed and authenticated certificate may very reasonably be detained in isolation for a period of 6 to 12 days. (This would also be true in the Southern United States should the traveler be inbound after a period in certain parts of Africa, South or Central America.) Although the yellow fever certificate is valid for 6 years and other immunizations for lesser periods, the travel of military men or others cannot be predicted very far in advance and extreme care should be taken to insure that the certificate, when issued for any reason, is complete in all details required for international travel and is properly authenticated. (Communicable Disease Branch, Preventive Medicine Division, Bureau of Medicine and Surgery)

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Rabies Control

Often, it has been said that "man's best friend is the dog." In recent years, however, this statement is becoming less true due to the generally increasing incidence of rabies. In many locations, the incidence has become alarming. Even with a strict control program wherein simultaneous vaccination of all pets is practiced, rabies is impossible to eliminate because of the existence of a reservoir in wildlife. In Louisville, for example, the rate of 5.34 rabid dogs per 10,000 dog population in 1952 jumped to 16.5 in 1954. During the same period, the rate in Chicago jumped from 0.03 in 1952 to 2.6 in 1954, according to a reprint from Proceedings of the U.S. Livestock Sanitary Association, 1955.

Since most larger cities have an active rabies control program, to what is the increase attributed? First, there is the reservoir maintained in nature through wildlife where rabies infects wild foxes, wolves, jackals, skunks, bats, and many other animals. Second, in the larger cities with rabies reasonably under control, a repeated infection of local animals is introduced by "tourist dogs." This class is held responsible for recent outbreaks in Chicago and Denver. Third, one of the most serious and difficult sources of rabies to control is that which exists in strays and wild dog packs. These foray in all situations conducive to rabies contact and dissemination.

Contrary to a frequently expressed opinion of an uninformed public, rabies is not a private matter of the individual. In endemic areas, rabies has become a matter of serious consequence to the community. As such, it is a community problem to be attacked at a community level in a concerted effort. A rabies control program should be preceded by an organized health education program directed towards informing the public of its full importance to the individual. During such a program, it is well to anticipate considerable adverse response, even active objection, from a few individuals who will place the welfare of a stray mongrel above that of a human being. In most

instances where the opposition is known, much can be done to placate these individuals by a careful explanation of the program in advance and enlisting their active cooperation in facilities proposed for handling stray dogs. It may even be necessary to stress the "public-health-of-the-dog aspect." It does sound ridiculous to place a dog's welfare above that of a child's, but the author has had such an experience that bogged down the whole program.

In establishing an effective rabies control program, whether in a military or civilian community, the following measures must be observed after the preliminary and concurrent publicity has paved the way:

1. Stray dogs must be eliminated from the community, whether these strays are individuals or in the form of "wolf packs." Regulations must be developed and rigidly enforced which stipulate that the dog must actually be under control of the owner at all times. This is best done by providing an escape-proof fence or a chain and suitable collar for the animal while unattended or a leash to control the animal when outside the confines of the owner's property. Annual registration of the animal with the authorities facilitates regulatory control. Penalties should be provided to insure that the owners comply with local requirements. Usually, at the onset of such a campaign, it may be anticipated that a few individuals will disregard regulations and it will be necessary to call into effect the police powers contained within the regulations. In establishing such control measures, it is essential that enforcement methods be provided, whether in the form of a military patrol or civilian agent. It is advisable to provide a title, such as "Rabies Control Officer" to avoid the stigma of the title of "Dog Catcher." In many instances, it will be necessary to shoot or snare the wilder dogs which evade capture. It must be remembered: These stray animals are especially dangerous and must be eliminated!

2. Dogs must be immunized against rabies. The best time to do this is during the registration period. It is well to emphasize that immunization will protect the dog as well as the owner and the family. It will also lessen the burden of responsibility and worry if the immunized animal bites someone. If chick embryo vaccine is available, the World Health Organization recommends that revaccination be done every three years. Where killed virus vaccine is used, annual vaccination is necessary. It is advisable, however, to insist upon annual vaccination as this will considerably lessen record keeping and confusion. Puppies vaccinated before they are 6 months old should be revaccinated within the first year of life, and because both types of vaccine require a month to attain immunity, vaccinated dogs should be leashed or confined for 30 days after inoculation.

3. Where rabies infects wild foxes, skunks, and other wild animals, organized efforts should be made in endemic areas to reduce the number of the wild animals. Trapping, shooting, gassing of dens, and poisoning techniques are among the methods in use.

In conclusion, a quotation from the brochure, A Ten City Survey by the Committee on Rabies of the United States Livestock Sanitary Association states:

"The most intelligent and dedicated effort to control rabies in the United States faces the inevitable complication of our federal decentralized political systems. In America, the national authorities simply do not dictate how communities choose to regulate their dogs. However, sound and dear this principle, dogs are no respectors of city, county, and state boundaries. Licensed pets in a city which conscientiously picks up stray dogs are exposed to rabies from strays wandering in from a nearby county which does not enforce its dog laws as strictly, and vice-versa. Dogs travel from state to state with their owners." (Gleason, E.H., LCDR MSC USN, PrevMedDiv, BuMed)

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Dishwashing Machines

The following findings and recommendations of the Committee on Sanitary Engineering and Environment of the National Research Council pertaining to the operation of double tank and single tank, door-type dishwashing machines are provided for information and guidance:

1. It is physically impossible without resorting to the use of pressure sterilizers to subject eating and drinking utensils in routine use to sterilization. In the light of all available information, sterilization is not necessary and heat treatment equivalent to pasteurization sanitizing offers adequate protection to health. This can be attained by placing increased and continuous emphasis on providing good operation and proper equipment (proper racks for the utensils being washed, detergent feeders, thermostat controls, pre-rinse equipment, et cetera).
2. Commercial double tank and single tank door-type dishwashing machines (that meet the published standard of the National Sanitation Foundation when properly installed, operated, and maintained) will cleanse and provide satisfactory bactericidal treatment for pre-flushed china dishes as well as stainless steel compartmented food trays. For satisfactory results, all trays should be evenly spaced in special wire racks built to hold trays at least 3 inches apart with used surface forward, with tops

sloped back toward the operator and making an angle of about 60° with the horizontal. This conclusion is based upon extensive tests using radioactive bacteria as an inert soil to show mechanical removal; using Mycobacterium phlei attached to surfaces in thin-walled capillary glass tubing to show destruction by heat; and using thermocouples attached to food contact surfaces and read at one second intervals by recording potentiometer to add the assurance that heat treatment is at least equivalent of pasteurization.

3. The currently recommended temperature of the washwater in both the double tank and single tank door-type machine, stated in the Manual of Naval Preventive Medicine as 140 to 160° F., should be increased to 150 to 160° F. in order to increase the factor of safety of bacteridical treatment. This is in preference to increasing the already high temperatures of the rinse waters which present mechanical difficulties that are insurmountable at reasonable cost.

4. All field services utilizing such machines for dishwashing should be instructed to make frequent observations of the routine operation of the machines with special emphasis on:

a. Maintaining specified temperatures of wash and rinse waters.
b. Maintaining a concentration of not less than 0.3% of a detergent suitable for use with the available water supply.
c. Seeing that not more than 5 trays, evenly spaced, are inserted in each rack and put through the machine with the food surface forward at right angles to the line of motion with upper portion inclined toward the operator.

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Twenty-Sixth Annual VD Postgraduate Conference

This conference was presented April 18 - 20, 1957, in Memphis, Tenn., through the cooperation of the U. S. Public Health Service and was sponsored by the University of Tennessee College of Medicine, Tennessee State Medical Association, and the Tennessee State Department of Health.

LT Vernon H. Young MC USNR, U S. Naval Hospital, Memphis, Tenn., represented the Bureau of Medicine and Surgery at the conference. Some of the topics mentioned by LT Young in his interesting and informative narrative report are given in the succeeding paragraphs.

Syphilis. Circumcision is an aid in the prevention of syphilis in the male. In untreated syphilis, approximately 1/3 of the cases can be expected to culminate with spontaneous cure, 1/3 in neurosyphilis or cardiovascular syphilis, and 1/3 as late latent syphilis. For the initial diagnosis of syphilis the results of standard serologic tests, a cardiolipin test, history and physical examination, cerebrospinal fluid examination plus the results of either

the Treponema Immobilization Test, Treponema Agglutination Test, or the Treponema Cephalin Flocculation Test were all thought to be essential. Biologic false positive serologic tests can be divided into two categories, the acute which results from some type of infection other than syphilis and usually disappears with recovery from the infection, and the chronic which may bear some relationship to collagen diseases. In one series, 80% of the cases were later diagnosed as having lupus erythematosus disseminatus.

Minimal treatment of early syphilis was recommended as being 4.8 million units of penicillin (many health department clinics are now using a single 4.8 million unit dose of benzathine penicillin) with 6 million units being a more desirable dose. Larger doses in the order of 6 to 9 million units were recommended as minimal for symptomatic neurosyphilis.

Gonorrhea. The ability of the gonoccoccus to survive for long periods in the body without evidences of clinical disease was again stressed in regard to the therapeutic problem. Recent epidemiologic observations have indicated that a high percentage of therapeutic failures occur with the currently employed treatment programs, particularly in the female. Some treatment clinics are using a combination of procaine penicillin and benzathine penicillin routinely for all cases and it seems to be the consensus that maintenance of therapeutic blood levels for long periods—perhaps up to 28 days—is necessary to insure cure.

Other discussions and reports concerned new serologic procedures, therapy, diagnosis, and prevention of the various venereal diseases. From the report, it appeared that attendance of medical officers, particularly those having responsibilities in matters dealing with venereal diseases, will find these Public Health Service organized conferences of considerable future value.

The conference covered much the same material as the Annual Venereal Disease Symposium which was held in the District of Columbia during April 1957. The problem of defining adequate therapeutic schedules for male gonorrhea offers a challenge to those Navy installations in areas where incidence of this disease is high. The goal of therapy should be 100% bacteriologic cure because the therapeutic failure which occurs in any less effective program can still spread the disease to contacts. There appears reason to doubt that maintenance of blood levels of penicillin for 28 days is necessary to eradicate the organizm in the male and equally doubtful that the current widely used treatment schedules of 1 to 3 days duration are adequate. Another topic of considerable public health interest discussed at both meetings was the "Antibiotic quarantine" of female contacts. By the use of monthly injections of benzathine penicillin in known promiscuous women in communities, rather marked decreases in the incidence of gonorrhea among males were obtained. One instance was mentioned where such a program involving only five women in a small nearby community resulted in a marked decrease in gonorrhea on a military post.

The Armed Forces Pest Control Board

On 17 November 1956, the Secretary of Defense issued a directive officially establishing the Armed Forces Pest Control Board. By the terms of this directive, the Board shall function as a joint agency of the three military departments under the management control of the Secretary of the Army, subject to the authority, direction, and control of the Secretary of Defense.

The Board is to function as a coordinating agency in the field of pest control, serve as an advisory body on this subject, and provide liaison in matters of pest control with other agencies as required. Pests coming within the Board's jurisdiction are defined as arthropods, rodents, and other destructive and obnoxious organisms, excluding fungi and bacteria other than those which destroy wood or wood products.

Membership on the Board is limited to 5 members from each of the military departments. The Board is composed of representatives of the Surgeon General, the Chief of Engineers, the Quartermaster General, the Chief Chemical Officer, and the Chief of Research and Development from the Department of the Army; the Chief, Office of Naval Research, the Chief, Bureau of Medicine and Surgery, the Chief, Bureau of Ships, and the Chief, Bureau of Yards and Docks from the Department of the Navy; and the Surgeon General, the Assistant Chief of Staff, Installations, the Deputy Chief of Staff, Development, and the Deputy Chief of Staff, Material from the Department of the Air Force.

The Secretary of the Army, designated by the Secretary of Defense as management agent, delegated the responsibility for providing administrative support to the Surgeon General of the Army, who redelegated this responsibility to the Commanding General, Walter Reed Army Medical Center. Office space has been provided for the Board at the Forest Glen Section of the Center.

Provision was made for the Board to be assisted by an Executive Secretary and such clerical assistance as may be required in the administration of the activities of the Board. The Executive Secretary will be an officer of the Army, Navy, or Air Force, selected on the basis of high professional qualifications and demonstrated administrative ability. The military departments will normally rotate in providing this officer. The Board began functioning officially on 18 February 1957 with Colonel Ralph W. Bunn MSC USA as the first Executive Secretary.

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Advanced Training Course in Disease Vector and Pest Prevention and Control

The fifth class of this three weeks' training course given once each quarter by the U. S. Navy Disease Vector Control Center (formerly Preventive

Medicine Unit No. 1), Naval Air Station, Jacksonville, Fla., is scheduled to commence on 19 August 1957. Quotas for this session will be filled with enlisted and civilian personnel only. To be eligible for enrollment, prospective trainees must be either graduates of the Environmental Sanitation Technician Course, Naval Hospital, Oakland, Calif., or personnel with at least a comparable background of experience in the field of insect and rodent control. In addition, all prospective trainees must be either currently connected with, or committed to, active participation in Navy insect and rodent control programs in a supervisory, inspectional, or operational status. Attendance quotas are available by letter request from the Officer-in-Charge, U S. Navy Disease Vector Control Center, Naval Air Station, Jacksonville, Fla., via the appropriate chain of command. Requests should contain a summary of the training and operational experience background of the prospective trainee. Due to the limited number of individuals that can be accommodated in each session, quotas will be assigned as requests are received. Requests received in excess of the total quota will be given priority for the next course.

The sixth class is scheduled to commence on 18 November 1957 and will be open to officers and civilians only. Although not directly connected with the Navy pest control certification program, successful completion of this course will provide the technical background required to make local application for certification.

Other details concerning this course of study are included in the original announcement which appeared in the Medical News Letter, Vol. 28, No. 2, dated 20 July 1956.

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Packaging Yellow Fever Vaccine

Periodically, suggestions are received from the field for the adoption of smaller packaging of yellow fever vaccine. Basis for these recommendations is that the vaccine must be used up within one hour following dilution and preparation of the vial for immunization, coupled with the fact that seldom is a group of 20 individuals presented to the medical facility for immunization at one time, much wastage of the standard item results.

For the benefit of those who are commendably concerned with the cost of the item, the following explanation is presented to demonstrate that no economy can be effected by standardizing a smaller dose package. A comparison of the per-dose basis will demonstrate that the smaller packaging will, in fact, considerably increase the per-dose cost when more than five individuals are vaccinated, but will have little effect on cost when the 20 cc. ampoule is used.

Both the 5 cc. and 20 cc. packages of yellow fever vaccine are contained in ampoules of the same size. The manufacture of this item involves very

high labor costs due to the elaborate handling precautions needed to guarantee a sterile potent product. The processing of embryonated eggs, the lyophilization of the vaccine, the sealing, testing, and inspection of the filled ampoules—all require highly skilled personnel.

All of this means, because the ampoule size and the exterior packaging remain the same, that the cost difference would be the result of the smaller volume of vaccine going into the ampoules. The 5 cc. ampoule, although containing 75% less vaccine, would cost approximately 15% less than the 20 cc. ampoule. Thus, whenever more than 5 doses are to be given, the 20 cc. ampoule becomes progressively more economical.

Finally, it must be pointed out that storage, too, could create a problem because it is certain that more of the 5 than the 20 cc. ampoules would be required. Since both packages are identical in size, the 20-dose material would require less storage space at 0° C. or below (lower than the normal refrigeration temperature) to provide the same number of doses.

The Chairman, Armed Services Medical Materiel Coordination Committee, has reviewed this problem with the sole manufacturer of the vaccine in the United States. As a result, it has been decided that only the 20 cc. ampoule will be retained as the standard item. (Communicable Disease Branch, Preventive Medicine Division, Bureau of Medicine and Surgery)

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Carbon Tetrachloride - An Underrated Hazard

The hazards of carbon tetrachloride are discussed and 12 illustrative cases in industry and in the home are presented. Carbon tetrachloride is extremely nephrotoxic. In fact, it is one of the commonest causes of acute renal failure. The probability of renal damage is increased by concomitant ingestion of alcohol. There are hazards in faulty diagnosis and treatment, but the greatest hazard is the lack of awareness of the dangers inherent in the use of carbon tetrachloride. The main problem is prevention of exposure.

Carbon tetrachloride should not be sold without suitable warning labels. Indeed, the warning should be strong enough to discourage its use in the household and small industries. In many large industries, less toxic compounds are now used as solvents and dry cleaners. The same substitutes would serve as well for smaller industries and in the home. Clearly, it is the responsibility of the government to protect the public against such hazards, and it is the duty of medical associations to remind governments of their responsibility. (Industrial Hygiene Digest, 21: 16, March 1957; Joron, G. E., Hollenberg, C H., Bensley, E.H., Carbon Tetrachloride - An Underrated Hazard: Canad. Med. Assn. J., 76: 173-175, 1 February 1957)

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Safe and Effective Application of Pesticides

In spite of the large volume of technical information and warnings on the hazards of the application of organic phosphate insecticides on the part of the manufacturers and of government and state agencies, poisonings continue in moderate volume. Some of the most fantastic cases involved loaders and pilots of aircraft applicators. In some localities, much misinformation as to vital facts has led to some public clamor for prohibition of useful and necessary pecticidal compounds.

A number of real and alleged cases of poisoning are described. These were caused by gross carelessness and neglect to follow the fundamental rules plainly indicated. Some recent developments in safe enclosure of insecticides are described, especially pasted moisture-proof bags and sealed bag ends. (Industrial Hygiene Digest, 21: 17, February 1957; Barnard, C. O., Safe and Effective Application of Pesticides: Agricultural Chemicals, 11, December 1956)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

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